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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/909,417 | 07/19/2001 | Masahiro Yatake | U 013559-6 | 7288 |

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| EXAMINER | |
|---|---|
| SHOSHO, CALLIE E | |
| **ART UNIT** | **PAPER NUMBER** |
| 1714 | |

DATE MAILED: 12/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/909,417 | YATAKE, MASAHIRO | |
| | Examiner | Art Unit | |
| | Callie E. Shosho | 1714 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *19 October 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *4-8,11,12,14-17 and 19-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *4-8,11,12,14-17 and 19-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Continued Examination Under 37 CFR 1.114*

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/19/05 has been entered.

2. All outstanding rejections are overcome by applicant's amendment filed 10/19/05.

### *Double Patenting*

3. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., In re Berg, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); In re Goodman, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); In re Longi, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); In re

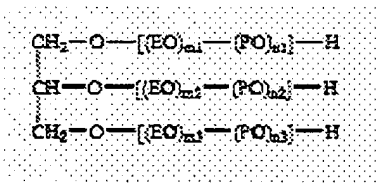
Van Ornum, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); In re Vogel, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and In re Thorington, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

4. Claims 4-5, 7-8, 11-12, 14-15, and 19-23 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-3, 5-12, 19, and 23 of U.S. Patent No. 6,846,352 (Yatake). Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following explanation.

Yatake discloses ink comprising 5-10% glycerin, surface treated pigment, 1,2-alkylene glycol such as 0.5-20% 1,2-pentanediol or 0.3-15% hexanediol, 0-10% (di)propylene glycol monobutyl ether, 0-5% acetylene glycol, and compound of the formula:



where m1+m2+m3+n1+n2 are 0.5 to 10 and the compound has molecular weight of not more than 1000. It is disclosed that the ink possesses surface tension of not more than 40 mN/m. There is also disclosed ink jet recording method comprising the steps of (a) providing the ink, (b) ejecting droplets of the ink, and (c) depositing the droplets on a recording medium to form image.

The differences between Yatake and the present claimed invention are (a) no disclosure in Yatake of water, (b) amount of (di)propylene glycol monobutyl ether, (c) amount of 1,2-alkylene glycol, (d) amount of glycerin, and (e) method for making pigment.

With respect to difference (a), it is noted that Yatake is silent with respect to the use of water.

Applicant's attention is drawn to MPEP 804 where it is disclosed that "the specification can always be used as a dictionary to learn the meaning of a term in a patent claim." *In re Boylan*, 392 F.2d 1017, 157 USPQ 370 (CCPA 1968). Further, those portions of the specification which provide support for the patent claims may also be examined and considered when addressing the issue of whether a claim in an application defines an obvious variation of an invention claimed in the patent. (underlining added by examiner for emphasis) *In re Vogel*, 422 F.2d 438,164 USPQ 619,622 (CCPA 1970).

Consistent with the above underlined portion of the MPEP citation, attention is drawn to col.11, line 1 as well as the examples of Yatake that disclose that the ink does in fact contain water.

In light of the above, it therefore would have been obvious to one of ordinary skill in the art that the ink of Yatake does in fact include water and thus, one of ordinary skill in the art would have arrived at the claimed invention from Yatake.

With respect to difference (b), it is noted that the present claims require 3-10% dipropylene glycol monobutyl ether or 3.5% propylene glycol monobutyl ether while Yatake discloses the use of 0-10% (di)propylene glycol monobutyl ether.

However, as set forth in MPEP 2144.05, in the case where the claimed range "overlap or lie inside ranges disclosed by the prior art", a *prima facie* case of obviousness exists, *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). Further, it would have been within the skill level of one of ordinary skill in the art to choose amounts of (di)propylene glycol in order to control properties of the ink including penetration of the ink into recording medium.

With respect to difference (c), it is noted that the present claims require 3-10% 1,2-pentanediol or 0.5-5% 1,2-hexanediol while Yatake discloses the use of as 0.5-20% 1,2-pentanediol or 0.3-15% 1,2-hexanediol.

However, as set forth in MPEP 2144.05, in the case where the claimed range "overlap or lie inside ranges disclosed by the prior art", a *prima facie* case of obviousness exists, *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). Further, it would have been within the skill level of one of ordinary skill in the art to choose amount of 1,2-alkylene glycol in order to control properties of the ink including surface tension.

With respect to difference (d), it is noted that the present claims require the use of 3-15% $C_3$-$C_{12}$ saccharide such as glycerol or glycerin while Yatake discloses the use of 5-10% glycerin.

However, as set forth in MPEP 2144.05, in the case where the claimed range "overlap or lie inside ranges disclosed by the prior art", a *prima facie* case of obviousness exists, *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). Further, it would have been within the skill level of one of ordinary skill in the art to choose amount of glycerin in order to control properties of the ink including viscosity.

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to choose amounts of (di)propylene glycol monobutyl ether, 1,2-pentanediol and/or 1,2-hexanediol, and glycerin in Yatake, including those presently claimed, in order to control the properties of the ink including penetration of the ink into the recording medium, surface tension, and viscosity, and thereby arrive at the claimed invention from Yatake.

With respect to difference (d), Yatake discloses the use of surface treated pigment, however, there is no disclosure of how the pigment is treated.

Applicant's attention is drawn to MPEP 804 where it is disclosed that "the specification can always be used as a dictionary to learn the meaning of a term in a patent claim." *In re Boylan*, 392 F.2d 1017, 157 USPQ 370 (CCPA 1968). Further, those portions of the specification which provide support for the patent claims may also be examined and considered when addressing the issue of whether a claim in an application defines an obvious variation of an invention claimed in the patent. (underlining added by examiner for emphasis) *In re Vogel*, 422 F.2d 438,164 USPQ 619,622 (CCPA 1970).

Consistent with the above underlined portion of the MPEP citation, attention is drawn to col.6, line 48-col.7, line 14 of Yatake which discloses that dispersing group is introduced onto the surface of pigment in by oxidation in order to produce pigment that can be dispersed without pigment and can withstand severe conditions.

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to use oxidation to produce surface treated pigment in Yatake order to produce pigment that can be dispersed without pigment and can withstand severe conditions, and thereby arrive at the present invention from Yatake.

## ***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 4-8, 11-12, 14-17, and 19-23 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 4 has been amended to recite that the ink contains "a 1,2-alkylene glycol having from 4 to 10 carbon atoms in an amount effective to reduce a tendency of the ink to form blurred print on a recording medium as compared to ink without the 1,2-alkylene glycol". It is the examiner's position that this phrase fails to satisfy the written description requirement under the

cited statute since there does not appear to be a written description requirement of the cited phrase in the application as originally filed, *In re Wright*, 866 F.2d 422, 9 USPQ2d 1649 (Fed. Cir. 1989) and MPEP 2163.

As support for such amendment, applicants point to page 2, first full paragraph and page 17, second paragraph of the specification. However, while these portions of the present specification disclose that blurs are liable to occur when paper is used as the material to be recorded and that the use of 1,2-alkylene glycol in inks of the present invention can reduce blurs, there is no support to recite that it is the amount of 1,2-alkylene glycol that reduces the tendency of the ink to form blurred print. That is, while the specification discloses that the use of 1,2-alkylene glycol can reduce blurs, there is no disclosure that 1,2-alkylene glycol must be present in a particular or effective amount for such reduction to occur. There is no disclosure regarding the amount in which the 1,2-alkylene glycol must be present to reduce blurs. Further, there appears to be no support to recite that using 1,2-alkylene glycol in effective amount reduces the tendency of the ink to form blurred print as compared to ink without 1,2-alkylene glycol. That is, while page 2, first full paragraph of the present specification discloses that blurs are liable to occur when inks are used on paper, there is no disclosure regarding the reduction of the tendency of the ink to form blurred print when the ink of the present invention contains 1,2-alkylene glycol as compared to the ink of the present invention without 1,2-alkylene glycol.

## ***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claims 4-5, 7-8, 11-12, 14-15, and 19-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yui et al. (U.S. 5,945,155) in view of WO 00/22056.

Yui et al. disclose ink comprising water, colorant including self-dispersing pigment produced by surface chemical reaction, 3-50% solvent such as glycerin, and 0.01-20% ethylene oxide/propylene oxide adduct of polyglycerin, i.e. saccharide-alkyleneoxy derivative, that comprises 0-200 repeating units of the formula $CH_2CHRO$, degree of polymerization of 2-30, and molecular weight of 166-250. There is also disclosed method for ink jet printing wherein the above ink is ejected from ink jet printer onto substrate (col.2, lines 30-54, col.3, lines 1-53, col.5, lines 15-28, and col.7, lines 6 and 40-42). Attention is drawn to example 2 which discloses ink comprising 55% pigment dispersion, 12% glycerin, 7% EO/PO adduct of polyglycerin, and water.

The difference between Yui et al. and the present claimed invention is the requirement in the claims of (a) glycol ether and 1,2-alkylene glycol and (b) surface tension of the ink.

With respect to difference (a), WO 00/22056[1], which is drawn to ink jet inks, discloses the use of 3-30%, preferably, 5-10%, glycol ether such as diethylene glycol monobutyl ether, triethylene glycol monobutyl ether, dipropylene glycol monobutyl ether, and propylene glycol monobutyl ether in order to improve the drying properties of the ink, improve the ability of the ink to penetrate the recording medium, and to suppress feathering or bleeding. It is noted that WO 00/22056 also discloses that the glycol ether is used in combination with 0.1-3% acetylene glycol surfactant in order to improve print quality and to prevent foaming or precipitation of the ink in the printer nozzles. Additionally, WO 00/22056 discloses the use of 0.5-20%, preferably 3-10%, 1,2-alkanediol, i.e. 1,2-alkylene glycol, such as 1,2-hexanediol or 1,2-pentanediol in order to prevent feathering or bleeding in prints and to improve print quality (col.3, lines 49-67 and col.5, line 17-col.6, line 17). Although there is no disclosure that the 1,2-alkanediol reduces the tendency of the ink to form blurred print as compared to ink without 1,2-alkanediol, given that WO 00/22056 discloses using 1,2-alkanediol identical to that presently claimed in amount as presently claimed and further given that WO 00/22056 discloses that the use of 1,2-alkanediol improves print quality, it is clear that the 1,2-alkanediol would intrinsically reduce the tendency of the ink to form blurred print as presently claimed.

In light of the motivation for using glycol ether and 1,2-alkanediol disclosed by WO 00/22056 as described above, it therefore would have been obvious to one of ordinary skill in

[1] It is noted that when utilizing WO 00/22056 in the above paragraph, the disclosures of the reference are based on Hayashi (U.S. 6,500,248) which is an English language equivalent of the reference. Therefore, the column and line numbers cited with respect to WO 00/22056 are found in Hayashi.

the art to use glycol ether and 1,2-alkanediol in the ink of Yui et al. in order to form ink with improved drying properties, improved ability to penetrate recording medium, and improved print quality that does not feather or bleed, and thereby arrive at the claimed invention.

With respect to difference (b), Yui et al. disclose using surfactant to control surface tension, but is silent with respect to actual values of surface tension.

WO 00/22056, which is drawn to ink jet inks, discloses controlling the surface tension of ink jet ink to values below 40 mN/m in order to improve penetration of the ink into paper and ensure wettability of materials constituting the recording head by the ink in a well balanced manner so that the print quality and reliability are improved (col.8, lines 52-62).

In light of the motivation for controlling the surface tension of ink jet ink to values below 40 mN/m disclosed by WO 00/22056 as described above, it therefore would have been obvious to one of ordinary skill in the art to control the surface tension of the ink of Yui et al. to such values in order to produce ink that has good penetration into paper as well as good print quality and reliability, and thereby arrive at the claimed invention.

9. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yui et al. in view of WO 00/22056 as applied to claims 4-5, 7-8, 11-12, 14-15, and 19-23 above, and further in view of *Introduction to Physical Polymer Science.*

The difference between Yui et al. in view of WO 00/22056 and the present claimed invention is the requirement in the claim of the molecular weight distribution of the saccharide-alkyleneoxy derivative.

Yui et al. disclose the molecular weight of the ethylene oxide/propylene oxide adduct of polyglycerin or saccharide-alkyleneoxy derivative, however, there is no disclosure that this saccharide derivative has molecular weight distribution of 2 or more.

However, given that Yui et al. disclose saccharide-alkyleneoxy derivative identical to that presently claimed, it would have been obvious to one of ordinary skill in the art that the saccharide-alkyleneoxy derivative would intrinsically possess same molecular weight distribution as presently claimed.

Evidence to support this position is found in *Introduction to Physical Polymer Science* (pages 97-99), which discloses that the polydispersity or molecular weight distribution of a polymer depends on the type of polymerization used to make the polymer. As seen on page 99, chain polymerization results in polymer with polydispersity of 1.5-3 while step polymerization results in polymer with polydispersity of 2-4.

Thus, given that Yui et al. disclose saccharide-alkyleneoxy derivative identical to that presently claimed which is necessarily made by the same polymerization process as the saccharide-alkyleneoxy derivative presently claimed, it is clear that the saccharide-alkyleneoxy derivative of Yui et al. would intrinsically possess the same molecular weight distribution as presently claimed, and thus, one of ordinary skill in the art would have arrived at the claimed invention.

10. Claims 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yui et al. in view of WO 00/22056 as applied to claims 4-5, 7-8, 11-12, 14-15, and 19-23 above, and further in view of EP 978547.

The difference between Yui et al. in view of WO 00/22056 and the present claimed invention is the requirement in the claims of compound of the formula $R-(EP)_m-OH$.

On the one hand, although there is no disclosure in Yui et al. of compound of the formula $R-(EP)_m-OH$, given that the use of such compound is not required, i.e. compound is present in amount of 0%, Yui et al. in combination with WO 00/22056 clearly meets the requirements of present claims 16-17.

On the other hand, when the presence of $R-(EP)_m-OH$ is required, i.e. compound is present in amount greater than 0% -10%, it is noted that EP 978547, which is drawn to ink jet inks, discloses the use of compound of the formula $R-[(EO)_n(PO)_m]k-T$ where R is $C_4-C_{10}$ alkyl, T is OH, k is 1, and n and m are integers. The motivation for using such compound is to produce ink that realizes good images having good drying speed and no significant feathering (paragraphs 1 and 9-11).

In light of the motivation for using $R-[(EO)_n(PO)_m]k-T$ disclosed by EP 978547 as described above, it therefore would have been obvious to one of ordinary skill in the art to use such compound in the ink of Yui et al. in order to produce ink that that realizes good images having good drying speed and no significant feathering, and thereby arrive at the claimed invention.

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hickman et al. (U.S. 5,356,464) disclose ink comprising saccharide-alkyleneoxy derivative, however, there is no disclosure of glycol ether or 1,2-alkylene glycol as presently claimed.

Kappele et al. (U.S. 6,538,049) disclose ink comprising glycerin and polyol/alkylene oxide condensate, however, there is no disclosure of pigment, glycol ether or 1,2-alkylene glycol as presently claimed.

Yanagida et al. (U.S. 6,287,374) disclose ink comprising 1,2-pentanediol and diethylene glycol monobutyl ether, however, there is no disclosure of saccharide-alkyleneoxy derivative as presently claimed.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Callie E. Shosho whose telephone number is 571-272-1123. The examiner can normally be reached on Monday-Friday (6:30-4:00) Alternate Fridays Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Callie E. Shosho
Primary Examiner
Art Unit 1714

CS
11/28/05